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COLLOCATION AND POLYSEMY: CAN ADJECTIVES SIGNIFY MEANING SENSES

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Background

The notion of polysemy has not received a great deal of research or pedagogical attention despite how common it is in the English language. The first 1000 words on the New General Service List (Browne, Culligan, & Phillips, 2013), which ranks the most frequently used words in the English language, contains a large number of words whose meaning is unclear without context. Read (2004a) notes that "numerous high-frequency words are inherently vague, particularly when encountered out of context: thing, make, nice, here, someone. Other words are polysemous, having various shades of meaning, a range of distinct uses or even quite different meanings: form, odd, stick, chip, break, draw, proper" (p. 213). However, for adult native-speakers, polysemy does not commonly create problems. Miller (1999) explains that

> It is useful to maintain a distinction between polysemy and ambiguity. Although polysemous open-class words are commonly assumed to be ambiguous, they are only potentially ambiguous. They are ambiguous in isolation, but open-class words are seldom used in isolation. In everyday usage, polysemous words are rarely ambiguous. People navigate daily through a sea of potential ambiguities, resolving them so easily that they seldom notice they are there. Consequently, the ubiquity of multiple meanings is easily overlooked, yet it provides clear proof, if proof is needed, of a remarkable human ability to cope with polysemy. (p. 12)

To orientate this issue with respect to other aspects of word knowledge, it is helpful to distinguish homonymy and polysemy.

Homonymy can be illustrated by considering the word ‘lie’ which can be used in the phrase ‘lie on a bed’ but carries a completely different meaning in the phrase ‘tell a lie’. Williams (1992) distinguishes the two qualities by explaining that “The terms homonymy and polysemy are typically defined with respect to the dimension of relatedness of meaning; homonymy refers to cases where the two senses are unrelated, and polysemy to those cases where some semantic relationship appears to exist” (p. 194). He also notes a similarity in how these qualities affect the mental lexicon by stating “it is still possible that the meanings of polysemous words are functionally independent and operate as discrete lexical entries, as do homonyms” (p. 195).

The interpretation of polysemous words can be limited by topical as well as contextual cues. Miller (1999) illustrates the importance of topical context by considering the polysemous noun ‘shot’. A doctor, bartender, golfer, and photographer, when discussing their respective fields, would all use this noun to convey a different meaning. He explains “The general notion is that each topic has its own vocabulary, so the problem is to learn what those vocabularies are, and what the meanings of polysemous words are in each different vocabulary. That knowledge is surely part of the contextual representations that help to determine intended meanings” (p. 14). Miller also describes how context helps humans chose the appropriate meaning when they encounter polysemy by stating “Local context refers to information provided by words in the immediate neighborhood of a polysemous word. Whereas topical context can disregard word order, local context depends heavily on the order of the words and on their syntactic categories” (p. 14-15). Kaplan (1955) also describes how humans understand the true meaning of polysemous words when he states “The 'context' (itself an ambiguous word) must here be taken to consist of the verbal setting in which the word to be interpreted occurs, i.e., the other words with which it is being used” (p.39). It is clear that despite the challenges polysemy would appear to create for native speakers, people use both topical and contextual cues to determine the intended meaning in a given situation.

However, it is more problematic for second language learners because “In terms of the mental lexicon, a new lemma is created for a

newly encountered word. In the case of a polysemous word, the learner would have to create separate lemmas for each separate sense of the word, unless he or she is aware of the meaning relations among the different senses" (Verspoor & Lowie, 2003, pp. 550-551). Schmitt and Zimmerman (2002) describe the process of vocabulary acquisition as being incremental since it is unreasonable to learn all the components associated with a word from only one exposure. Schmitt (1998) emphasizes that "Knowing only a single meaning sense for a polysemous word must be considered only partial knowledge" (p. 292). Therefore, polysemy is an issue which is of particular importance for both language learners and teachers due to its commonality among the most frequently used words.

Learner's dictionaries are a potential resource; however, there has not been much research on their effectiveness for vocabulary acquisition, especially in regard to polysemy, despite the considerable resources devoted to their production (Read, 2004b). One study conducted by Nesi and Haill (2002) found that students have particular problems with polysemous words. Even when they refer to a learner's dictionary, they often choose the inappropriate meaning sense for these words. Carter (1998) also notes that "Polysemy is an especially problematic feature of words in dictionaries and pedagogical word lists" (p. 30). He explains this further by asking "Where should the line be drawn between meanings which are related and thus conflatable under a single entry, and those which are unrelated, and therefore, need to be segmented in a dictionary?" (p. 13). This difficulty is further exasperated for the most frequent polysemous words because learners often will fail to realize they are not fully grasping the meaning of the polysemous word in the particular context.

Previous studies

A review of the literature shows several studies focusing on polysemy. The core meaning refers to the most literal or logical central meaning for a polysemous word. The different meaning senses can be related

to the core meaning by relatively clear semantic associations. In Verspoor and Lowie's (2003) study, the researchers limited themselves to polysemous words which had at least three different senses: a core sense, a figurative sense, and an even more figurative sense. The core sense also had to have a clearly concrete referent, such as 'rake', 'taut' or 'nugget'. Three native-speaker judges were used to make these determinations. The researchers tested the hypothesis that by providing the learners with the core meaning would help them guess the more figurative senses accurately and aid in long-term retention because this approach would allow for precise elaboration of the targeted poysemous word. Verspoor and Lowie (2003) state that "The results confirmed the hypothesis that a core-based association strategy is more effective than a non-core-based association strategy or no association strategy in guessing the figurative sense of a polysemous word" (p. 559). The core cue was more effective than a noncore cue when the learners were guessing an unfamiliar figurative sense for a polysemous word. These findings are consistent with William's study (1992) in which he stated that his results "are compatible with the view that the various meanings of a polysemous word are interrelated in a way that is not the case for homonyms" (p. 202). Verspoor and Lowie propose that "Apparently the precise elaboration generated by the core sense leads to better retention of polysemous words" (p. 567). However, the researchers concede that this guessing strategy might not be as effective for poysemous words with a more abstract core sense.

Another study focusing on polysemy was conducted by Mason, Knisely, and Kendall (1978) who investigated the ability of third and fourth grade native-speaking children to identify secondary meanings of words through the use of context. They postulate that "If children can identify, use, or remember primary meanings of words but not their secondary meanings, this would imply that, unlike adults, children do not or cannot use contextual cues to disambiguate meanings of words" (p. 3). Their results showed that the children did not have much success in identifying secondary meanings; they relied on their understanding of primary meanings while ignoring the other information contained within the sentence. The researchers conclude that "The role of vocabulary

in reading comprehension, then, has at least three aspects: knowing a meaning of a word, knowing more than one meaning, and knowing how to choose the right meaning" (pp. 14-15).

Polysemy, along with spelling, association and grammar, was also an aspect of Schmitt's (1998) longitudinal vocabulary acquisition study of advanced second language learners. As part of his study, he chose polysemous words from the UWL (University Word List) which had three or more meaning senses so as to allow for an examination of the learners' growing awareness of the different senses. He found that "The average meaning proportion was generally less than .50, indicating that the "partial" knowledge was nowhere near full productive mastery" (p. 295). He mentioned that these results might be somewhat surprising given the advanced level of the students but explained further that in later assessments within the study "the vast majority of meaning senses stayed at the same state of knowledge (72%, 263/366). This suggests knowledge of meaning sense has a certain amount of inertia and does not change easily. This is probably to be expected, as acquiring a large number of meaning senses quickly and easily might be too auspicious to hope for, at least in L2 learning" (p. 300). However, he also found that once a meaning sense is known productively, this knowledge is likely to be retained long-term.

Context as it relates to polysemy was also investigated in Kaplan's (1955) study. He was primarily interested in how the ambiguity of a polysemous word is affected by the words which proceed and follow it and by the entire sentence in which it occurs. The seven conditions he investigated were: the proceeding word, the following word, the proceeding word and the following word, the two proceeding words, the two following words, the two proceeding words and the two following words, and the entire sentence. Similar to Schmitt's study (1998) described above, Kaplan only included words which had at least three senses listed in a dictionary. Furthermore, these senses had to be clearly distinguishable, in his own judgment, from one another. There was often a discrepancy between these two criteria; the dictionary would list two or more senses separately while he felt they were too similar to be treated individually for his study. The results showed that "The

context consisting of one preceding word appears to be least effective in reducing ambiguity, being significantly worse than one word following. One word on each side of the word to be translated is more effective than two preceding or two following. It is noteworthy that two words on each side of the key word are comparable in effect to the entire sentence" (p. 43). These results bring into question the positive effect collocation (the focus of my study) might have on the acquisition of secondary senses of polysemous words. However, Kaplan goes on to qualify his results specifically in regard to the semantic content of the context by stating "A context might consist entirely of articles, prepositions, conjunctions, etc., and could be expected to contribute less to a translation than one which also contained words not so poor in semantic content" (p. 44). He then separated the results based on the semantic content of the surrounding words by stating that "How effective a context is in reducing ambiguity is a function, therefore, of whether it itself has a semantic content or is functioning primarily syntactically" (p. 44). The effect of the proceeding word in reducing ambiguity was much higher if it was a content word than a function word, but this condition was still the least effective of the seven investigated. Overall, Kaplan found that "A short verbal setting therefore reduces average ambiguity from about 5 1/2 senses to about 1 1/2 or 2" (p. 46).

A study focusing on dictionary use by international students at a British university was carried out by Nesi and Haill (2002). They found that the subjects often made mistakes with polysemous words even when consulting a dictionary because the subjects tended to choose the first dictionary listing without considering the alternatives. Nesi and Haill explain that "Subjects were found to have particular difficulty in selecting appropriate entries and sub-entries in their dictionaries. Some consultation problems resulted in serious errors of interpretation, which subjects were largely unaware of" (p. 277).

Justification

Exposure alone in an EFL learning environment is unlikely to lead to the

acquisition of different meaning senses for polysemous words. Explicit vocabulary instruction is needed along with incidental components (Verspoor and Lowie, 2003; Read 2004b). As mentioned previously, when learners encounter a polysemous word, they will often assign it the one meaning sense with which they are familiar. Verspoor and Lowie (2003) believe "An improved insight into the polysemous nature of words should make learners aware of the ''dangers'' of attaching only one meaning to a particular word form" (p. 570). However, even if a learner is aware that a particular word has several meaning senses, they still must determine which meaning sense is appropriate for the given context.

With resources, such as the New General Service List (Browne, Culligan, & Phillips, 2013), it is easy to prioritize words based upon frequency for classroom instruction. However, the relative frequency of different meaning senses is unknown (Read, 2004). Instructors and advanced learners can use examples from a corpus and/or a learner's dictionary for clarification, but the learner must also be aware that they are not fully grasping a polysemous word's meaning for that given context. Read (2004b) states that "Depth of knowledge focuses on the idea that for useful higher-frequency words learners need to have more than just a superficial understanding of the meaning; they should develop a rich and specific meaning representation as well as knowledge of the word's formal features, syntactic functioning, collocational possibilities, register characteristics, and so on" (p. 155). Schmitt (1998) also emphasizes this point for both learners and researchers when he states "most previous studies have accepted recognition or production of a single meaning sense as evidence that a word is "known," even though this type of response demonstrates only partial knowledge at best" (p. 283).

Alternative approach/practical application

In the previous studies section, Verspoor and Lowie's (2003) investigation was described. This study provides evidence that figurative senses of polysemous words are more efficiently acquired by using the core sense as a cue which allows the learner to develop 'precise elaboration'. They

believe learners should be encouraged to make meaningful connections between the core sense and the other meaning senses for polysemous words. This approach can also be justified from a cognitive linguistics perspective as it entails the creation of interrelated networks within the mental lexicon which should aid in retention. An additional benefit is that this approach reduces the total number of words which must be learned (Nation, 2008). However, Nation cautions that the L1 might hinder this process. He uses the example of the word 'fork' in English which can mean a utensil or a splitting of a road into two paths. In Indonesian, these two concepts are articulated through separate unrelated words.

From a classroom perspective, an approach using the 'core' meaning as a cue to help the learners acquire the more elaborate or figurative meanings for polysemous words has merit. Verspoor and Lowie (2003) state "In the case of a polysemous word, the semantization process should be aided if the learner recognizes the meaning relation between the word's separate senses" (p. 551). Mason et al. (1978) also note that special instructional attention needs to be paid to polysemy. They also note how more research into sentences containing polysemous words is needed to determine the effect of context of the word's meaning. Many researchers agree explicit instruction, especially in EFL environments with limited exposure to the L2, is needed for the acquisition of the different meaning senses of these words (Nation, 2008; Read, 2004; Schmitt, 1998; Verspoor and Lowie, 2003).

There are several justifications for this study into collocations and highly frequent polysemous words: evidence that polysemy is a problem for L2 learners even at an advanced level, the high frequency of the nouns under investigation, the importance of the different meaning senses (described later in the procedures section), the importance context has in determining the appropriate meaning sense, and the productive knowledge gained through learning larger chunks of language.

Procedure

The New General Service List (NGSL) was initially used to compile a list

of the most frequent nouns in English. To make this study manageable, only word families within the first 100 words of the NGSL were considered. The Cambridge Advanced Learner's Dictionary (2008) was then used to determine if the noun had multiple meaning senses and if the given meaning sense was considered important; Important words to learn according to the Cambridge Advanced Learner's Dictionary (CALD) are listed as: essential (E), improver (I) or advanced (A). Through this process, the original list of nouns was reduced by eliminating words which did not meet the criteria. For example, the nouns 'can' and 'people' were not investigated further; 'can' was not considered to be an important word and 'people' only had one meaning sense listed. Additionally, the noun 'time' has two more meaning senses (to the ones listed in the results section) as in the following sentences: 'Your time for the marathon was just under three hours' and 'It is difficult for children to sing in time with the music'; however, neither definition was listed as being important by CALD, so they were not investigated further.

The resulting list was then given to three native-speaker expert judges all of whom are English language instructors at the university level. Along with the words, a list of definitions for the different meaning senses was also given to the judges with the following instructions: if a student understood one of these meanings, would they also be able to understand the others? Is the difference in meaning enough to justify the different senses of the word being taught separately? The judges indicated which meaning senses they believe are similar enough to be treated as the same. Their results were compared and a consensus was reached as seen in Table 1 in the results section. The noun 'back' was eliminated at this point because the consensus opinion was that the two definitions were similar enough to be treated as the same meaning sense.

The remaining nouns were then investigated through the British National Corpus (2007) to determine their most common adjective collocates. Only collocations (adjective + noun word combinations) which occurred a minimum of 200 times within the British National Corpus (BNC) were investigated further. At this point, the noun form of 'will' was eliminated because the most common adjective collocation did not meet this threshold. For each collocation, ten random occurrences

were selected from the BNC. The meaning sense for the noun within each sentence was then determined and tabulated (as seen in Tables 2 to 7).

Results

The definitions, according to the CALD, for the investigated nouns are as follows:

Time

1. The part of existence measured in seconds, minutes, hours and days. 'He wants to spend more time with his family'. (E)
2. A particular point in the day as expressed on a clock. 'Is that the right time?' (E)
3. A suitable point for an activity. 'it is time for bed.' (E)
4. An occasion or period. 'Every time I ask you to do something, you forget to do it.' (E)
5. An historical period. 'Those were hard times.' (A)

Work

1. An activity which a person uses physical or mental energy for money. 'I've got so much work to do.' (E)
2. The material used or produced at a job. 'I'll finish this work at home.' (E)
3. A place where someone goes specifically to do their job. 'Do you have to travel far to work each day?' (E)
4. Something created as a result of effort, such as a painting, book or piece of music.' (A)

Use (for nouns: listed definitions were very similar)

1. A purpose for which something is used. 'I have no use for a boat.' (E)
2. When you use something, or when something is being used. 'Don't touch the machine when it is in use.' (E)

Way

1. A route, direction or path. 'Do you know the way to the train station?' (E)
2. The direction in which something is facing. 'Which way does the room face?' (E)
3. Distance or period of time. 'We walked a long way.' (E)
4. A choice, opinion, belief or action. 'I like the way you did your hair.' (E)
5. The manner in which something happens. 'It's amazing the way she manages to stay so calm.' (E)
6. An action that can produce the result you want; a method. 'There are many ways of solving the problem.' (E)
7. The space needed for a particular movement. 'Am I in your way?' (I)
8. A want. 'If she doesn't get here own way, she sulks like a child.' (A)

Day

1. A period of 24 hours. 'He runs 5 kilometers a day.' (E)
2. The period within 24 hours when it is naturally light. 'These animals sleep in the day and hunt at night.' (E)
3. The time you spend at work or school. 'I work a seven-hour day.' (E)

Thing

1. Used to refer to an object in an approximate way. 'What is that thing over there?' (E)
2. [plural] possessions. 'All of their things were destroyed in the fire.' (I)
3. Used to refer to an idea, subject, event or action in an approximate way. 'That was an unkind thing to say.' (E)
4. [plural] the general situation. 'Things have been going very well recently.' (I)

Table 1 shows the results from the native speaker judges in regard to how similar the different meaning senses are for the targeted nouns. The

brackets indicate which definitions, in the judges' opinion, are similar enough in meaning to be treated as the same. For example, for the noun 'way', all three judges felt definitions 4, 5 and 6 were essentially the same.

Table 1 Native speaker judgement on the distinctiveness of the different meaning senses

	NS Judge 1	NS Judge 2	NS Judge 3	Consensus
Time	(1+3), 2, 4, 5	1, (2+3), 4, 5	(1+5), (2+3+4)	1, (2+3), 4, 5
Work	(1+2), 3, 4	(1+2), 3, 4	(1+2), 3, 4	(1+2), 3, 4
Use	(1+2)	1, 2	1, 2	1, 2
Way	(1+2+4+5+6), 3, 7, 8	1, 2, 3, (4+5+6), 7, 8	(1+7) 2, 3, (4+5+6), 8	1, 2, 3, (4+5+6), 7, 8
Day	1, (2+3)	1, 2, 3	1, 2, 3	1, 2, 3
Thing	(1+2), (3+4)	(1+2+3), 4	(1+2+3+4)	(1+2), (3+4)

Tables 2 through 7 show all of the adjective collocations for the investigated nouns which occurred a minimum of 200 times within the BNC. The number of BNC occurrences is listed in the second column, while the remaining columns list the definitions and the number of times each definition was expressed in the 10 sample sentences. For example, the collocation 'good time' occurred 876 times in the BNC, and in 4 out of the 10 sample sentences definition 1 was expressed.

Table 2 Adjective collocations for 'time'

	BNC occurrences	1	2+3	4	5
long time	4222	10	0	0	0
short time	1004	10	0	0	0
good time	876	4	5	0	1
full time	588	10	0	0	0
present time	415	0	0	10	0
right time	410	0	9	1	0
only time	354	2	0	8	0
spare time	353	10	0	0	0
given time	278	2	0	8	0
particular time	270	0	2	4	4
extra time	258	10	0	0	0
whole time	231	10	0	0	0
other time	226	0	0	9	1
considerable time	222	10	0	0	0

'Full time' was hyphenated in 6 of the 10 instances.

Table 3 Adjective collocations for 'work'

	BNC occurrences	1+2	3	4
social work	1235	10	0	0
hard work	1224	10	0	0
good work	306	9	0	1
recent work	240	8	0	2
other work	216	8	1	1
new work	209	4	0	6

For 'recent work' many of the 1+2 definitions discussed scientific research. Unless it referenced a completed paper, it was categorized as being 1+2.

Table 4 Adjective collocations for 'use'

	BNC occurrences	1	2
Good use	261	10	0

Table 5 Adjective collocations for ‘way’

	BNC occurrences	1	2	3	4+5+6	7	8
long way	1749	0	0	4	6	0	0
only way	1748	0	0	0	10	0	0
other way	1452	3	2	0	5	0	0
best way	1166	0	0	0	10	0	0
different way	502	0	0	0	10	0	0
wrong way	392	3	0	0	7	0	0
right way	347	0	1	0	9	0	0
good way	343	0	0	0	10	0	0
effective way	317	0	0	0	10	0	0
similar way	293	0	0	0	10	0	0
new way	260	0	0	0	10	0	0
better way	256	0	0	0	10	0	0
easy way	255	0	0	0	10	0	0
normal way	207	0	0	0	10	0	0
particular way	202	0	0	0	10	0	0

Table 6 Adjective collocations for ‘day’

	BNC occurrences	1	2	3
other day	1204	10	0	0
following day	999	10	0	0
present day	521	10	0	0
previous day	416	10	0	0
good day	319	10	0	0
whole day	233	4	5	1

‘Present day’ was always used to represent the present and in compassion to a past time.

‘Good day’ was used as a greeting in 5 out of the 10 instances

Table 7 Adjective collocations for 'thing'

	BNC occurrences	1	2
only thing	1299	0	10
whole thing	1141	1	9
good thing	822	0	10
other thing	641	0	10
important thing	625	0	10
best thing	581	0	10
real thing	365	3	7
right thing	352	0	10
bad thing	271	0	10
little thing	251	5	5
main thing	216	0	10

'little thing' was twice used to refer to a person (poor little thing)

Discussion

The NGSL is an amazing resource for teachers and learners of English given that the 2800-word list offers 92% coverage of general English (Browne et al, 2013). However, if a second language learner were to only memorize an L1 translation for each word, they would not be able to understand 92% of general English. Nor would they be able to use these words productively. There are several reasons for this disparity in recognizing 92% of the words used and the learner's level of understanding of a reading or listening passage. A common example would be a chunk of language in which the overall meaning is different from the collective meanings of the words within the chunk as can be seen in the phrase 'my go to' referring to something that is commonly used in a given situation. When producing language (speaking or writing), there are even more challenges for the English language learner. Word combinations, such as 'make research' (as opposed to 'do research') may be acceptable in a learner's L1 but are unnatural in English.

The goal of this study was to produce a tool which would make the NGSL more effective. Polysemy, as described in the background section of this paper, is especially problematic for English language learners,

and given the high frequency of occurrence for polysemous words, it is an area of vocabulary instruction that merits attention. There are specific challenges for learners with these words, such as having knowledge of the different meaning senses, being able to determine which sense is being expressed, and using natural word combinations. The results for this study address the final two challenges.

Firstly, as seen in tables 2 though 7, many adjectives appear to be exclusively used with one meaning sense for the polysemous noun. For example, the noun 'time' in the collocation 'spare time' only refers to the meaning sense of a part of existence as in seconds, minutes, hours or days. However, 'time' in the collocation 'present time' refers to an occasion or period. The adjective in these collocations indicates which meaning sense is being referenced. Of the 53 adjective + noun collocations which were investigated, 35 of the nouns within these collocations referenced the same meaning sense in all 10 sentences taken from the BNC. This finding shows that the adjective collocate can reduce or more commonly eliminate the polysemy within the noun.

The second challenge learners face is using polysemous nouns naturally. Productive knowledge of these nouns can be developed by treating the collocation as a chunk of language. Native speakers are often able to predict what word will be uttered next by having a developed knowledge of the preceding word. To illustrate, when a native speaker hears the adjective 'foreseeable', they are likely able to predict that the noun 'future' will follow. It is much more effective to draw the students' attention to the entire collocation 'foreseeable future' as opposed to treating 'foreseeable' as an individual lexical item. Similarly, learners may more effectively acquire productive knowledge of the collocations within this study by treating them as chunks of language along with the meaning sense(s).

Furthermore, if these collocations were treated as single words, many would appear on the NGSL. The collocation 'long time', which occurs 4222 times within the BNC, would likely appear just within the first 1000 most frequent words on the NGSL. The exact ranking could be easily determined with access to the corpus used to compile the NGSL.

While this study only investigated collocation and polysemy for

nouns within the first 100 words on the NGSL, the findings indicate the potential value of addressing the challenges learners face with polysemy by focusing on collocations as opposed to individual words.

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